

**Additional lichen records from Australia 86. *Hymenelia ceracea* (Arnold)
M.Choisy and *Thelenella fernandeziana* (Zahlbr.) H.Mayrhofer**

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Abstract

Hymenelia ceracea (Arnold) M.Choisy (Hymeneliaceae) and *Thelenella fernandeziana* (Zahlbr.) H.Mayrhofer (Thelenellaceae) are reported for the first time from Australia. The former occurs on granite in the Southern Tablelands, New South Wales, while the latter was collected from sandstone in woodland in the Australian Capital Territory.

Introduction

Field work and the re-assessment of older herbarium collections continue to improve our understanding of the diversity and distribution of the Australian lichen flora. In this contribution, *Hymenelia ceracea* (Arnold) M.Choisy and *Thelenella fernandeziana* (Zahlbr.) H.Mayrhofer, are reported for the first time from Australia, the former from the Southern Tablelands, New South Wales, and the latter from the Australian Capital Territory.

Hymenelia ceracea (Arnold) M.Choisy, *Bulletin Mensuel de la Société Linnéenne de Lyon* **18**, 145 (1949) Figs 1 & 2

Thallus epilithic, effuse to ± determinate, pale to medium yellowish brown, smooth, continuous and almost membranous to rimose or areolate, thin, to 50–80(–100) µm thick, forming scattered colonies to 5(–10) mm wide, often in a mosaic with other crustose lichen species. *Areoles* solitary and rounded to contiguous and angular, 0.2–0.5 mm wide. *Cortex* lacking, but the thallus with an uppermost, amorphous, alga-free layer, 6–15 µm thick. *Algal layer* 25–70 µm thick, thinner and continuous beneath apothecia; cells green, globose, chlorococcoid, 7–13 µm wide; interstitial hyphae 1.5–2.5(–3) µm wide. *Medulla* thin and poorly delimited, heavily impregnated with minute rock fragments and crystals, not containing calcium oxalate (H₂SO₄–), I–; hyphae short-celled, 2–3 µm wide. *Prothallus* and *hypothallus* not apparent. *Apothecia* moderately numerous, usually solitary, occasionally in pairs or 3s, innate to subadnate, rounded, broadly ellipsoid or more irregular in outline, (0.13–)0.22(–0.30) mm diam. [*n* = 55]; disc plane to slightly or deeply concave, smooth, epruinose, initially flesh-coloured to yellowish brown, becoming orange-brown to medium or darker rust-brown or brown-black; margin slightly paler than or concolorous with the disc, 30–50 µm thick, entire, moderately prominent, persistent; apothecia hyaline in section, apart from the dark, granular and refractive epipsamma that dominates the epihymenium and covers the outer excipular surface. *Proper excipulum* with a comparatively thick, outer, annular collar and a thin, cupulate, inner zone; excipular collar 35–50 µm thick, almost completely hyaline, of radiating thin-walled hyphae with cells 4–6 × 2–2.5 µm, K–, N–, the outermost 5–8 µm of rounded cells, 2–3 µm wide, appearing dark greenish brown to brown-black in section due to being heavily coated and interspersed with the same K-insoluble granules as in the epihymenium (see below); inner excipular zone hyaline, 20–30 µm thick laterally towards the surface, 10–15 µm thick below and at the base, extending from a point adjacent to the epihymenium downwards beside the hymenium, beneath the hypothecium and up the opposite side of the apothecial section, consisting of thin-walled, elongate periclinal hyphae, KI+ dark blue, K–, N–. *Hypothecium* hyaline, 10(–15) µm thick, interspersed with minute granules, KI–, K–, N–, of variously orientated hyphae 1.5–2 µm wide. *Hymenium* hyaline, 65–85 µm thick, not interspersed with granules or oil droplets; hymen-

ial gel I+ red-brown, KI+ blue; hymenium, hypothecium and inner excipulum patchily H₂SO₄+ blue. *Epihymenium* hyaline, 7–10 µm thick, K–, N–, dominated by a dense concentration of epipsammic granules on and between the apices of paraphyses; granules c. 0.5–0.8 µm wide, not dissolving in K. *Paraphyses* rather loosely arranged to tightly conglutinate in water, loosening a little in K (except near the apices), simple or with some anastomoses below, more richly branching in and below the epihymenium, longer-celled below, shorter-celled to slightly moniliform distally and more markedly constricted at the septa, 2–3(–3.5) µm wide, containing minute granules and vacuoles; apical cells hyaline, not or slightly swollen or moderately swollen and rounded to ellipsoid, 3–5(–6) µm wide. *Asci* narrowly to broadly clavate or clavate-cylindrical, (4–)8-spored, 55–75 × 12–17 µm [*n* = 20], KI–, with an abrupt stalk; apex rounded, with a thick tholus when immature, the tholus much thinner at maturity; ocular chamber lacking. *Ascospores* colourless, simple, narrowly to broadly ellipsoid or oblong-ellipsoid, with rounded or subacute ends, thin-walled, lacking a perispore, overlapping-uniseriate in the ascus or irregularly biseriolate or uniseriate below and biseriolate distally, (11–)14(–17) × (6–)7.5(–9) µm [*n* = 70], commonly containing a large vacuole and granules. *Pycnidia* not seen. *Chemistry*: No substances detected by TLC.

Previously known from Europe, Macaronesia, Korea and eastern Canada (Poelt & Vězda 1981; Clauzade & Roux 1985; Berger & Priemtzhofer 2008; Aptroot & Moon 2014; Fryday & McCarthy 2018), *H. ceracea* is the third species of the genus known from Australia, along with the common and mainly pantemperate *H. lacustris* (With.) M.Choisy and the endemic Tasmanian species *H. gyalectoidea* Kantvilas (Kantvilas 2014). *Hymenelia lacustris* is most similar to *H. ceracea*, but it is semi-aquatic to almost fully aquatic in fresh water, with paler and often larger apothecia that are sunken in the more robust thallus and have a hypothecium that is thicker and non-inspersed (e.g. Fletcher *et al.* 2009, as *Ionaspis*; Kantvilas 2014).

SPECIMENS EXAMINED

New South Wales: ● Southern Tablelands, Twomeys Creek, 3 km N of Jerangle, on road to Captains Flat, 35°51'14"S, 149°23'59"E, 985 m alt., on weathered roadside granite in pasture, *J.A. Elix* 46493, 5.xi.2017 (CANB); ● *loc. id.*, *P.M. McCarthy* 4684, 5.xi.2017 (CANB).

Thelenella fernandeziana (Zahlbr.) H.Mayrhofer, *Bibliotheca Lichenologica* **26**, 33 (1987) Figs 3 & 4

Thallus epilithic on siliceous rocks, areolate, medium to dark grey-green, to 0.3(–0.5) mm thick. *Areoles* moderately to strongly convex, 0.3–1(–1.5) mm wide, smooth, matt, corticate. *Cortex* hyaline, amorphous or obscurely prosoplectenchymatous, (30–)40–70 µm thick, subtended by a paraplectenchymatous subcortex to 12 µm thick, of rounded, hyaline to grey-brown cells 4–7 µm wide. *Algal layer* 80–150 µm thick. *Photobiont* cells green, globose, chlorococcoid, 10–18(–20) µm diam. *Medulla* 70–150(–200) µm thick, I–. *Prothallus* not apparent. *Ascomata* perithecia, numerous, solitary, almost completely immersed in the thallus, 0.18–0.45 mm diam.; perithecial apex rounded, black; ostiole punctiform, in a shallow depression. *Involucrellum* absent. *Excipulum* (in section) 40–70 µm thick at the apex, with an outer brown-black zone, internally pale brown; sides and base hyaline, 25–35 µm thick and consisting of thin-walled, periclinal elongate hyphae with cells 5–8 × 1–1.5 µm. *Subhymenium* hyaline to pale brown, 15–20 µm thick. *Paraphyses* with abundant anastomoses, 1–1.5(–2.5) µm thick, long-celled, containing minute oil(?) globules, tightly conglutinate in water, loosening a little in K. *Hymenium* non-amyloid. *Asci* (6–)8-spored, elongate-cylindrical or clavate-cylindrical; apex thick-walled, lacking an ocular chamber. *Ascospores* biseriolate or overlapping-uniseriate in the ascus, medium to dark brown from early in their development, narrowly ellipsoid to oblong-ellipsoid or short-fusiform, muriform, with 6–9(–10) transverse septa, each transverse locule with (1–)2(–3) longitudinal or diagonal septa, (28–)37(–47) × (13–)17(–22) µm [*n* = 25]; wall thin, smooth, lacking a perispore (except when very immature). *Pycnidia* not seen.

First described from basalt in the Juan Fernández Islands, a Chilean territory in the south-eastern Pacific Ocean (Zahlbruckner 1924, as *Microglaena*), this lichen is distinguished from all other *Thelenella* species by the combination of a comparatively thick greyish thallus, simple, immersed, non-involucellate perithecia and ascospores that become brown early in their ontogeny (Mayrhofer 1987; Morse 2016). The type collection was made by C. and I. Skottsberg on Santa Clara Island in 1917 (Zahlbruckner 1924; Mayrhofer 1987), and the species was recollected there and on nearby Mas a Tierra by H.A. Imshaug in 1965 (Fryday & Coppins 2004). Although there are no further published records of this species, the Museum of New Zealand Te Papa Tongarewa contains material of *T. fernandeziana* from New Zealand (4 km NW of Pourerere, E of Waipukurau) collected by H. Mayrhofer in 1992. <https://collections.tepapa.govt.nz/object/224955>

SPECIMEN EXAMINED

Australian Capital Territory: • NE slopes of Mt Mugga Mugga, Canberra Nature Park, beside Hindmarsh Drive, Woden Valley, Canberra, 35°20'43"S, 149°07'10"E, 660 m alt., on sandstone pebbles embedded in porphyritic soil in area of dry land salinity in open *Eucalyptus-Allocasuarina* woodland, P.M. McCarthy 4811, 27.xii.2018 (CANB).

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Figure 1. *Hymenelia ceracea* (J.A. Elix 46493, CANB). Scale: 1 mm.

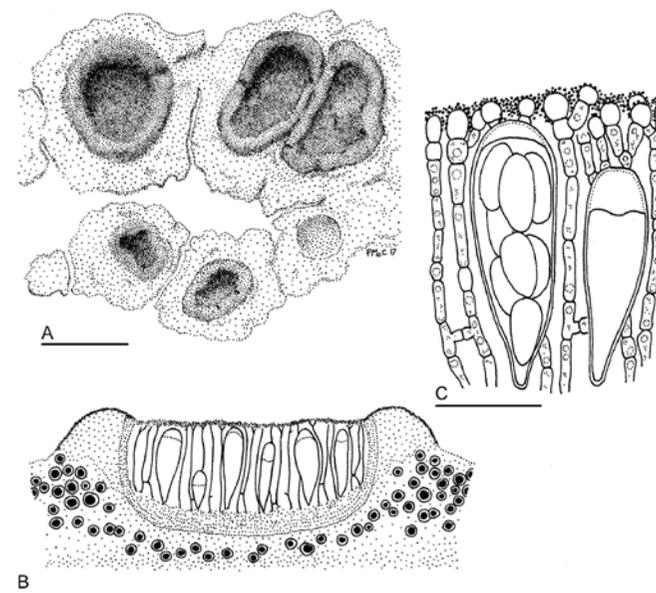


Figure 2. *Hymenelia ceracea* (J.A. Elix 46493, CANB). A, Habit of thallus and apothecia; B, Sectioned apothecium and adjacent thallus (semi-schematic); C, Mature and immature asci, paraphyses and epispammic granules. Scales: A = 0.2 mm; B = 0.1 mm; C = 20 μ m.



Figure 3. *Thelenella fernandeziana* (P.M. McCarthy 4811, CANB). Scale: 2 mm.

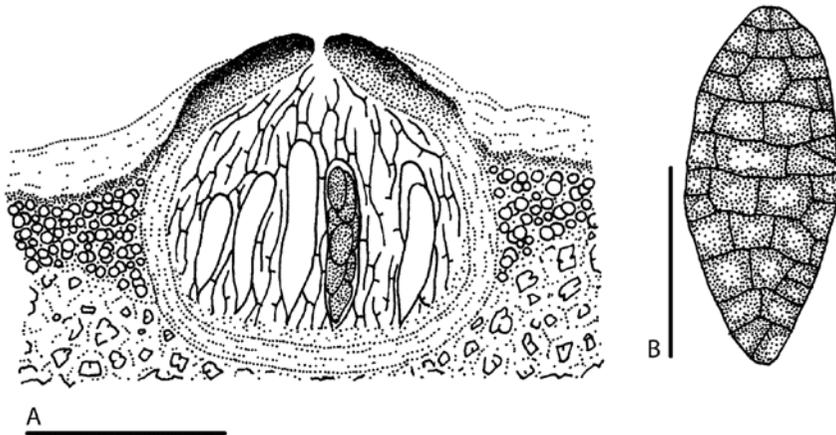


Figure 4. *Thelenella fernandeziana* (P.M. McCarthy 4811, CANB). A, Sectioned perithecium and adjacent thallus (semi-schematic); B, Mature ascospore. Scales: A = 0.2 mm; B = 20 μ m.

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